

ABSTRACT

A composite polymer electrolyte membrane is formed from a first polymer electrolyte comprising a sulfonated polyarylene polymer and a second polymer electrolyte comprising another hydrocarbon polymer electrolyte. In the first polymer electrolyte, 2-70 mol% constitutes an aromatic compound unit with an electron-attractive group in its principal chain, while 30-98 mol% constitutes an aromatic compound unit without an electron-attractive group in its principal chain. The second polymer electrolyte is a sulfonated polyether or sulfonated polysulfide polymer electrolyte.